

\*\*INSEPECT THE FULL  
CONTENTS OF THE KIT.  
INSTRUCTIONS.  
PACKING LIST.  
BACKORDER SHEETS.  
PRIOR TO BEGINNING  
ANY INSTALLATION



**Kit #'s:**  
KLM69006  
KLM69016  
KLM69026

**Version 1.4**

*kelderman.*

**AIR SUSPENSION SYSTEMS**

**2686 Highway 92 - Oskaloosa, IA 52577**  
**phone: 641.673.0468 - fax: 641.673.4168**  
**www.kelderman.com**

# **2017+ Ford F-250/350/450 P/U 5-6" Rear Install Instructions Installation Instructions**



## Installation

1. Before removing anything off the truck, measure the pinion angle and write the angle down. This is important because you will need to put the axle back to this measurement after the installation. Also, take a measurement from the front of the axle to a location on each side of the frame. Write these measurements here.  
Pinion angle \_\_\_\_\_. Right side \_\_\_\_\_ Left side \_\_\_\_\_ **NOTE: All the bolts in this kit use a flat washer on each side of the bolt.** It is required to remove the pickup bed.
2. Jack up the rear of the frame so that most of the tension is off the leaf springs. Place a set of jack stands under the frame and block the tires so the axle won't move. Place a jack stand under the pinion so it doesn't rotate. Remove the leaf springs and shocks. Keep the rear shackle bolt as you will use it in Step 10 when installing the accumulator tanks. Remove the bolts that hold the sway bar to the axle (if equipped) and let it hang from the end links. Remove the bump stops on the bottom of the frame.

NOTE: THE FUEL TANK WILL NEED TO BE SLID TOWARDS THE CENTER OF THE VEHICLE TO GET THE DRIVERS SIDE FORWARD BOLT OUT OF THE LEAF SPRING PERCH



*Passenger side pictured. This truck is equipped with factory sway bar.  
Not all trucks are equipped with sway bars.*

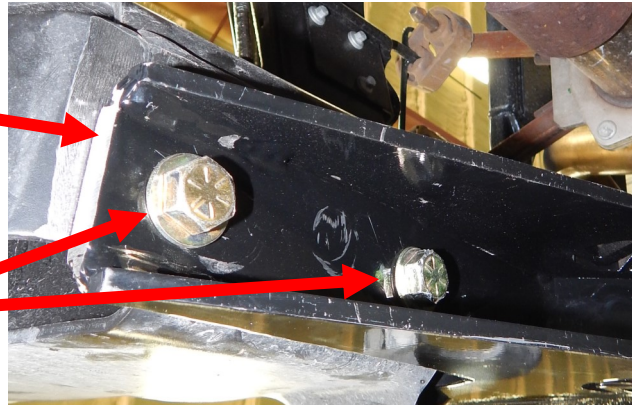


3. Locate the trailing arm mounts (Part # 10008001). Use a sander or grinder to grind the powder coat off the front edge. You will be welding this front section to the frame. The trailing arm mounts fasten to the factory leaf spring perch with the original leaf spring bolt. You will also drill two bolts for the 1/2" x 1-1/2" bolts that fasten into the bottom of the frame. Use the nut plates and slide them into the frame. Torque the 1/2" bolts to 85 ft./lbs. and the factory bolt to 225 ft./lbs.

*Grind here*

Weld the bracket to the frame after the bolts are torqued.

*Drill these holes for the 1/2" bolts*



**NOTE: WHEN WELDING USE AN ANTI SURGE PROTECTOR OR DISCONNECT THE BATTERIES TO REDUCE THE CHANCE OF DAMAGING ELECTRONICS.**

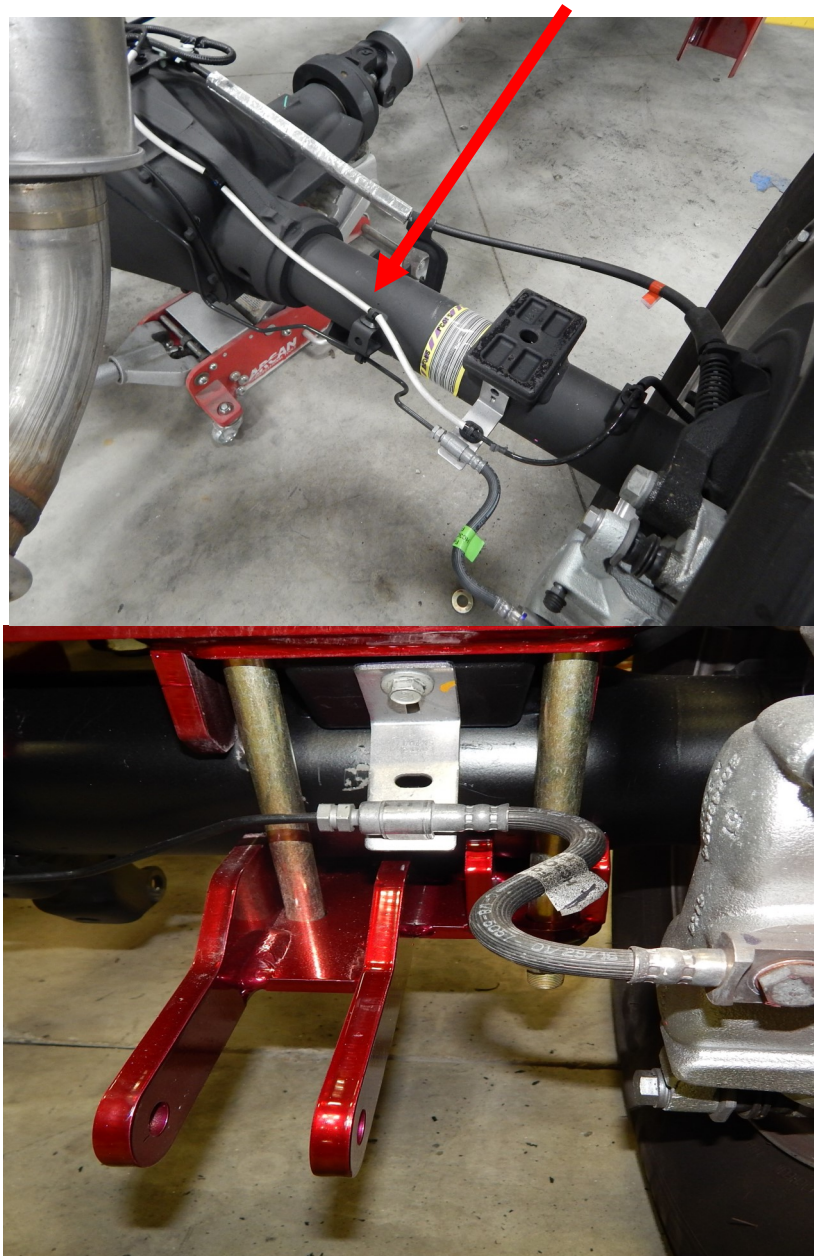


*Weld the front side of the trailing arm mounting bracket. Nut plate slides inside frame.*



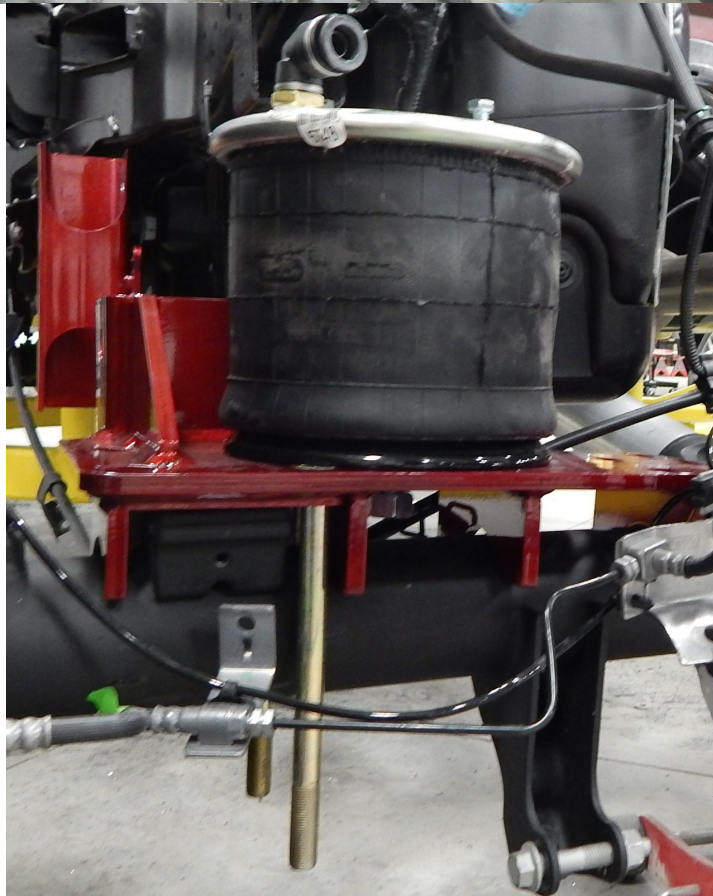
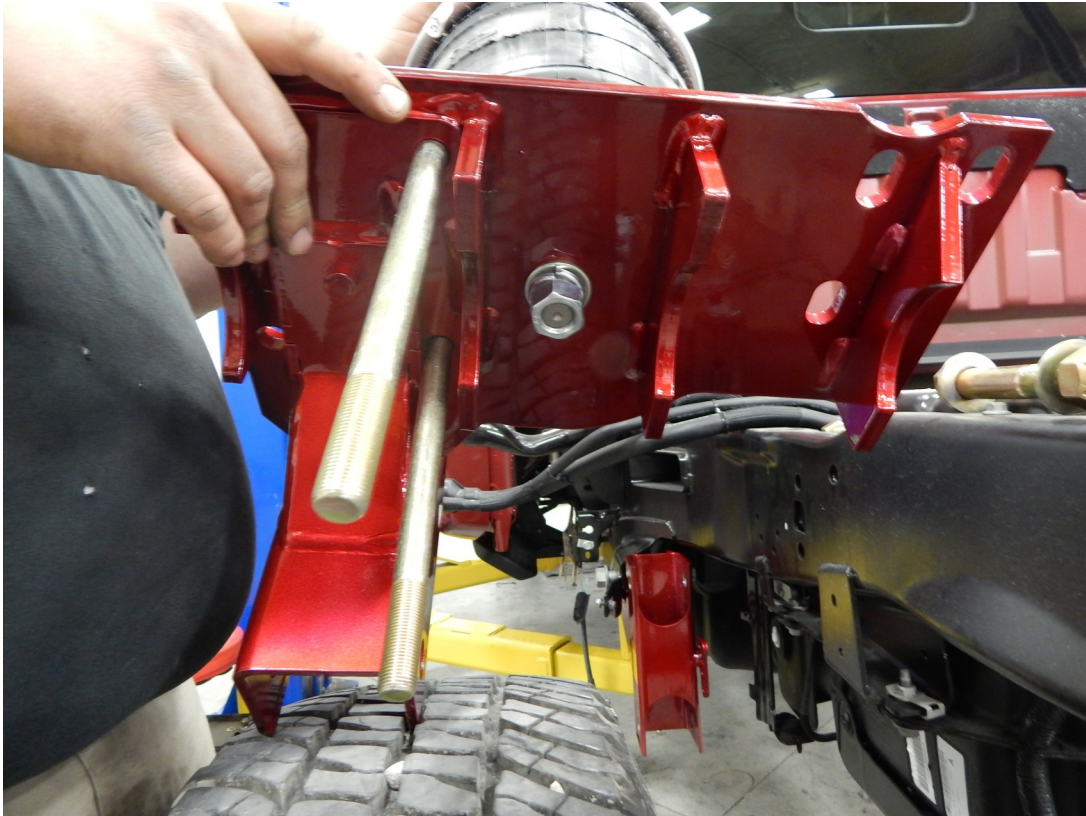
4. Locate the lower air bag mounts and axle clamps (Part # 8012-DS and 8011-PS) and the F5748 air bags. Locate the driver side lower bag mount and drop (2) of the 5/8" x 9" (bolts may be a bit shorter or longer depending on axle tube size) bolts in the outer holes of the mounts. Place the air bag on the air bag mount and tighten the 3/4" nut finger tight. Place the assembly on top of the axle leaf spring perch. Locate the driver side lower axle clamp. The lower axle clamps fasten to the axle so the shock ears are towards the frame (away from the tire). Snug these bolts up for now. They will be torqued in step 8. Repeat on the passenger side.

***BEFORE MOUNTING THE LOWER AIR BAG MOUNT ON THE PASSENGER SIDE MAKE SURE TO MOVE THE ABS LINE OUT OF FACTORY LOCATION. FAILURE TO DO THIS WILL CAUSE THE LINE TO BE DAMAGED***



Passenger side pictured

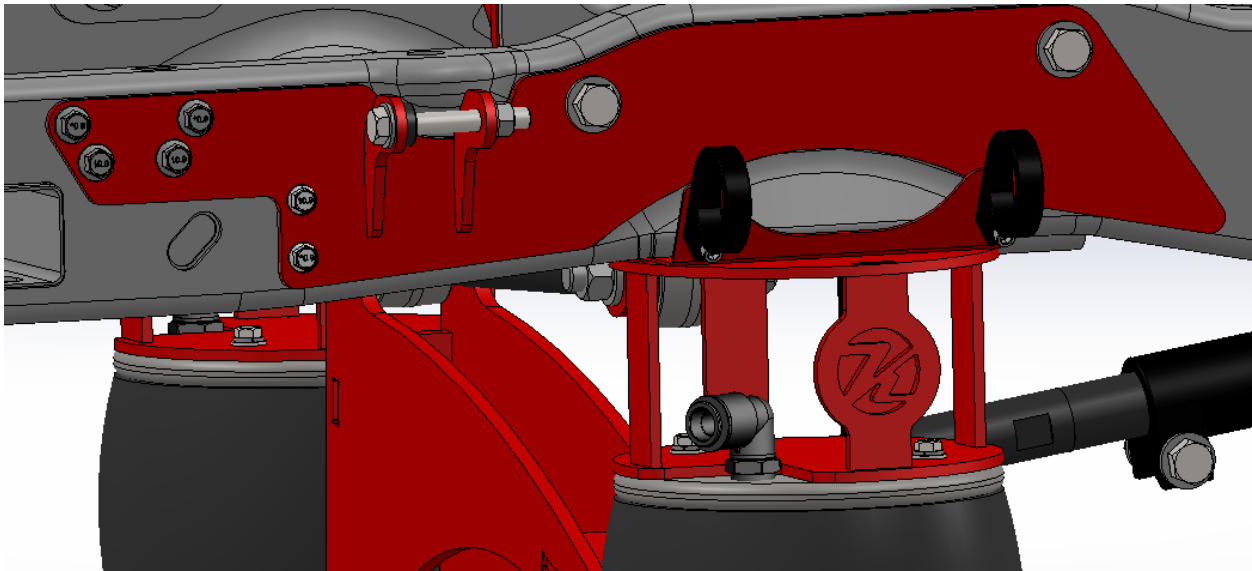




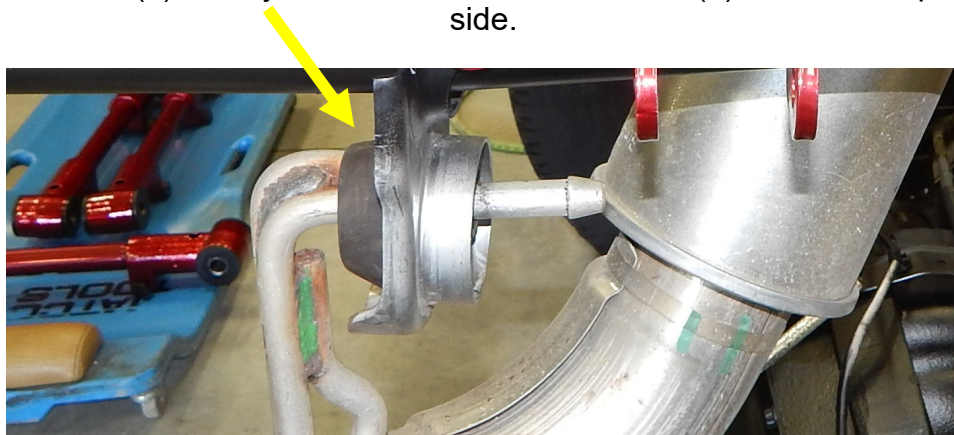
*Drivers side  
pictured*

5. Locate the upper air bag mounts (Part # 69439-DS and 69714-PS), Shock Reservoir mounts (Part # 10003915), shock mounts (Part # 10006487-DS and 10006485-PS) and upper pan hard bar mount (Part # 10008002). Starting with the drivers side, fasten the shock mounts to the outside side of the frame with the 5/8 x 4 1/2" bolts, and at the rear of the frame use the OEM bolts. Fasten the air bag mount to the bottom of the frame with the factory bump stop bolts.

**The remote reservoir shock mounts go between the bottom of the frame and the upper air bag mount.**

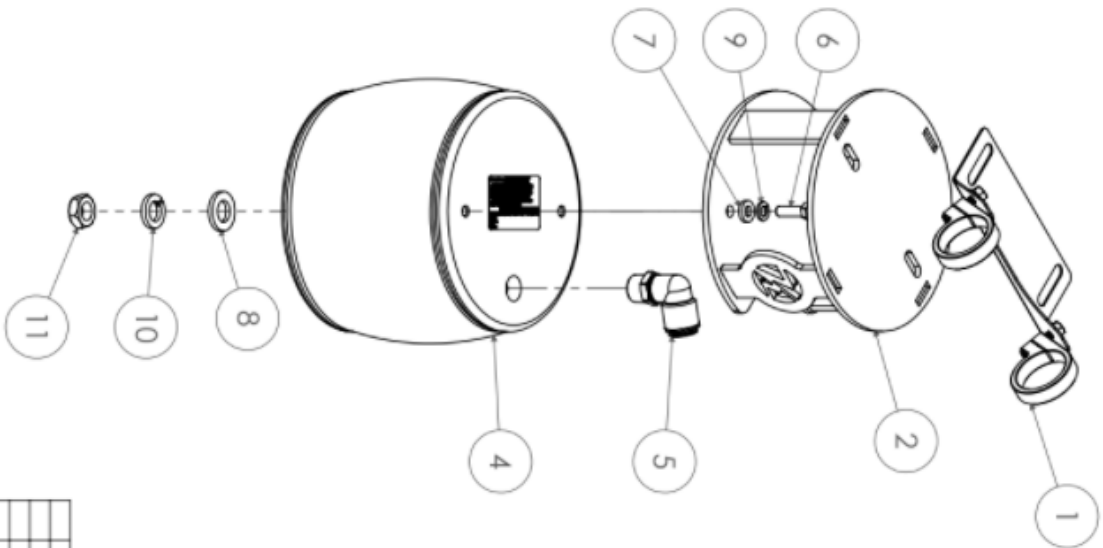


Cut off the outer tab off that holds the exhaust bracket. Just the inside bracket will remain. Use the (4) factory bolts on the drivers side and (6) bolts on the passenger side.

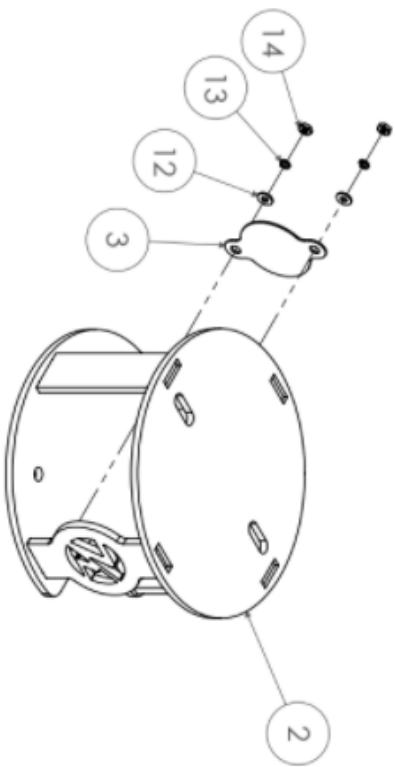


Refer to the diagrams on the next page for installation and bolt orientation





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10003915	Assembly - Raptor Shock Reservoir Bracket	1
2	69439	Weldment - (DS) Upper Bag/Frame Mount	1
3	69566	Plate - 16ga - Round Point	1
4	80012-5748	5748 Firestone Air Bag	1
5	80143	90° Male Connector, Union, SAE Flare, 3/4" x 3/4" -14 NPT (Sediment)	1
6	12212	Bolt - 3/8-16 x 1.25 - Gr.8	2
7	13022	Washer - 3/8" - Flat SAE Washer	2
8	13028	3/4" Flat Washer	1
9	13046	Spilt Lock Washer - 3/8" - YZ	2
10	13056	Lock Washer - 3/4"	1
11	13208	Jam Nut - 3/4"-16 Gr. 5	1
12	14062	FLAT WASHER - SAE - #10	2
13	14086	SPILT LOCK WASHER - #10 - SS	2
14	14097	Hex Nut - #10-24 - GR5 - Z	2



REV	ECH	CHANGE DESCRIPTION	CHGDATE	DATE

 THIRD ANGLE PROJECTION	A ISO METRIC STANDARD	1:10 Approximate Weight = lbs
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES FINISHES ARE: XX 1.00 XX 1.50 FINE DIA. ±.007 DIA. ±.005	MATERIAL SPECIFICATION: DESCRIPTION: Assembly - (DS) Upper Bag Frame	PROJECT: 2017* #250-350 Pickup 4-Link (New)
DRAWN: JAC CHECKED: JAC DATE: 10/20/2024	PART NUMBER: 10000814	DESIGNED BY: Tom Anderson



SHEET 1 OF 1

6. Located the passenger shock mount and place it against the frame use the OEM bolts to fasten the rear of the shock mount. Locate the passenger side upper bag mount/pan hard bar mount and shock reservoir mount. Attach the upper bag mount to the bottom of the frame (with the remote reservoir mount sandwiched in between) using the bolts that held the bump stop in place. Do not torque the bolts yet. Locate the (2) 1/2" x 4-1/2" bolts and insert them from the outside of the frame inwards. Locate the (2) 5/8" x 2" bolts and run them top down from the hitch mount to the upper bag mount. Torque the 1/2" bolts to 85 ft./lbs. and the 5/8" bolts to 175 ft./lbs. Torque the factory studs in the bottom of the frame to 55 ft./lbs. Fasten the air bags to the upper air bags on each side with the 3/8" x 1" flat and lock washers. Torque to 30 ft./lbs.

*5/8" x 2" bolts on hitch mount—factory and aftermarket is the same*



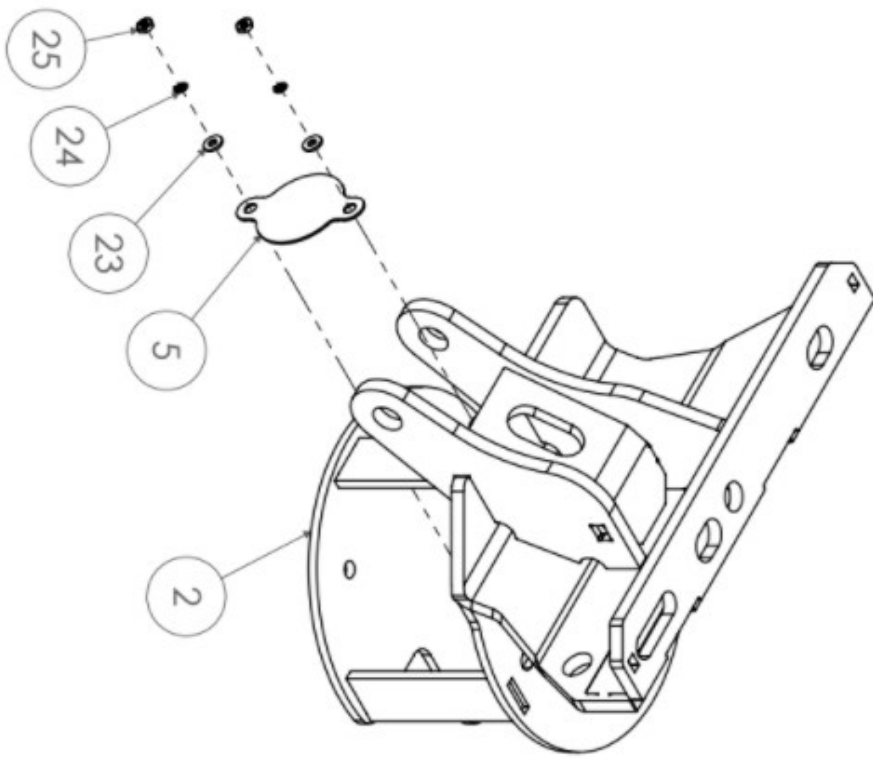
*Passenger side shown with shock installed*

*Use the factory bolts in the bottom of the frame to locate the upper air bag mount  
Remember to install the remote reservoir mount between frame and upper bag mount*



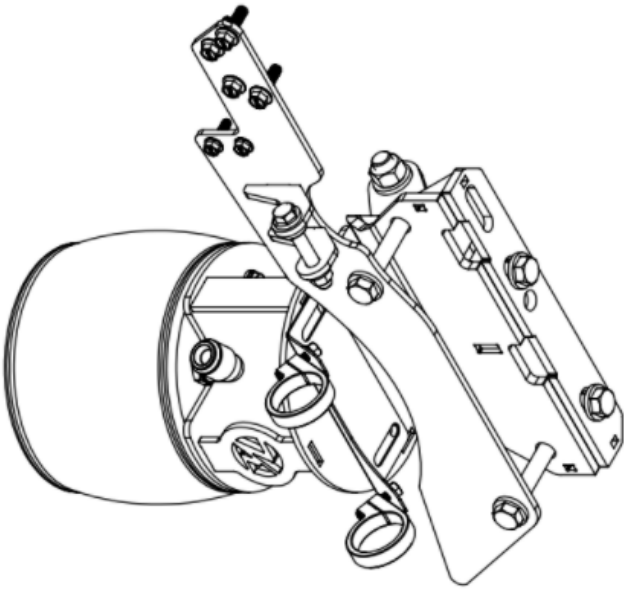






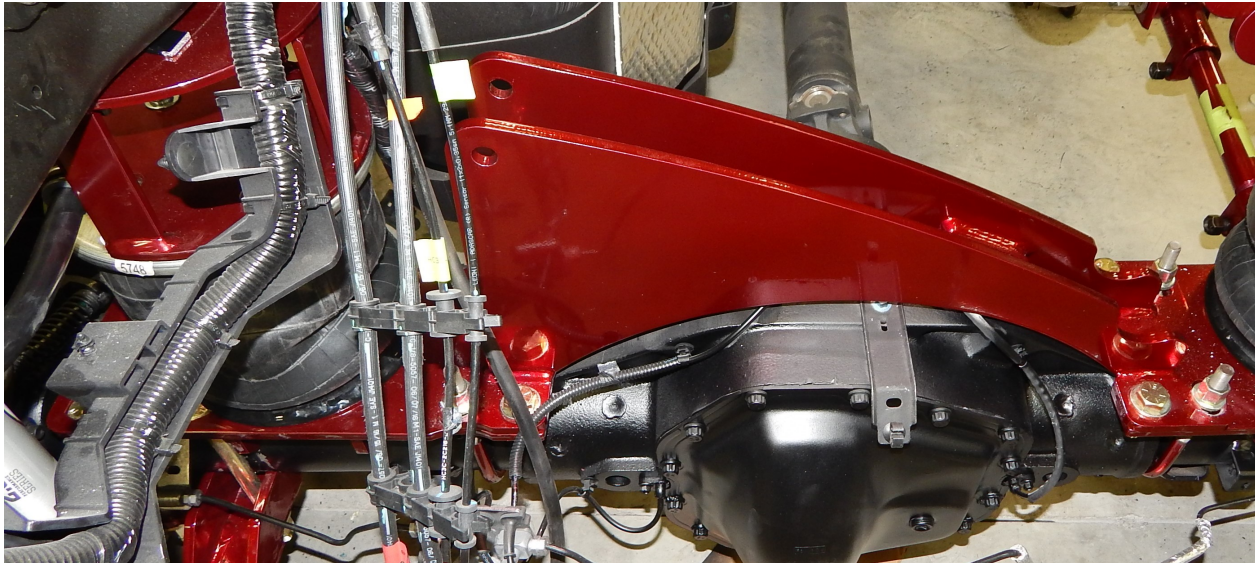


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	10003915	<i>Assemblies</i> Assembly - Raptor Shock Reservoir Bracket	1
2	69714	<i>Weldments</i> Weldment - (PS) Upper Bag/Frame Mount	1
3	10006485	Weldment - (PS) Shock Mount	1
		<i>Parts</i>	
4	18769	CRR - 1" OD x .562" ID x .3" Long - Bushing	1
5	69566	Plate - 16ga - Round Point Plate	1
		<i>Purchased Parts</i>	
6	80012-5748	5748 Firestone Air Bog	1
7	80143	90° Male Connector, Union, SAE Flare, 3/4" x 3/4" - 14 NPT (Sealant!)	1
		<i>Hardware</i>	
8	12025	Bolt - 1/2"-20 X 3.5" Gr. 8 YZ	1
9	12212	Bolt - 3/8-16 x 1.25 - Gr.8	2
10	12409	Bolt - 5/8"-18 X 2" Gr. 8 YZ	2
11	12431	Bolt - 5/8"-18 x 4.5" Gr.8	2
12	12533	Bolt - 3/4"-16 x 4 1/2" GR8	1
13	13022	Washer - 3/8" - Flat SAE Washer	2
14	13024	Washer - 1/2" Flat SAE Washer	2
15	13026	Washer - 5/8" Flat SAE Washer	8
16	13028	Washer - 3/4" - Flat SAE Washer	3
17	13046	Split Lock Washer - 3/8" - YZ	2
18	13056	Lock Washer - 3/4"	1
19	13124	Lock Nut - 1/2"-20 Gr. 8	1
20	13126	Lock Nut - 5/8" - 18 Gr. - 8 YZ	4
21	13128	Lock Nut - 3/4"-16 Gr. 8 YZ	1
22	13208	Jam Nut - 3/4"-16 Gr. 5	1
23	14062	FLAT WASHER - SAE - #10	2
24	14086	SPLIT LOCK WASHER - #10 - SS	2
25	14097	Hex Nut: #10-24 - GR5 - Z	2
		<i>OEM Hardware</i>	
26	13872	Flange Hex Bolt: M10-1.5 x 35mm - 10.9	4
27	14045	Flange Hex Bolt: M8-1.25 x 30mm - Class 10.9 - Z	2



8. Locate the lower pan hard bar mount (Crossmember Part # 69421) and brake line relocation bracket (Part # 69036). The crossmember fastens to the lower air bag mounts with the four 5/8 x 2" bolts and two U-bolts. Make sure to put the brake line relocation bracket on the rear stud of the U bolt on the passenger side before tightening. Torque the 1/2" bolts to 85 ft./lbs. and the U-bolts to 55 ft./lbs. Torque the 5/8" bolts on the lower bag mounts to 175 ft./lbs.

SEE PIC ON NEXT PAGE

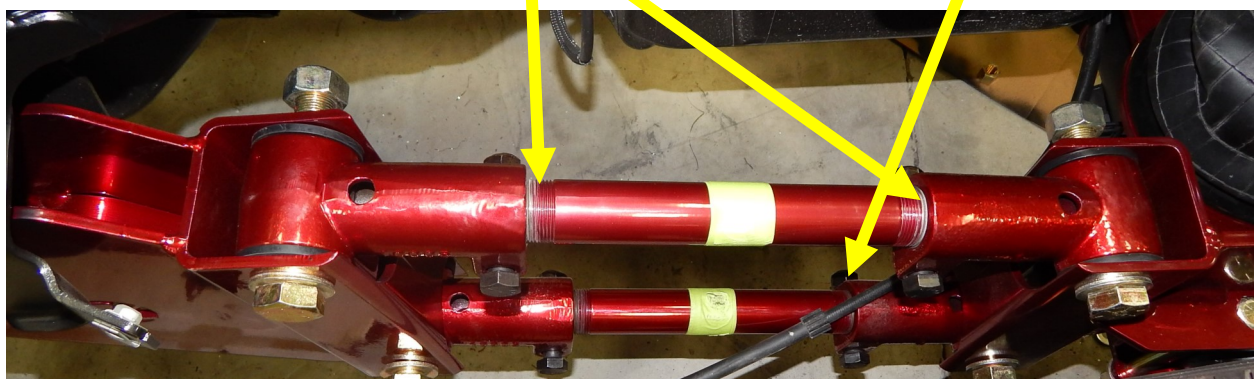


9. Locate the trailing arms and adjust them so there is 9-1/2" between the knuckles. This is a good starting point that will get your axle close to centered and the pinion angle near original. Insert the trailing arms into the lower bag mounts with the 7/8" x 5" bolts. Fasten the front of the trailing arms into the forward trailing arm mounts with the 7/8" x 5" bolts. On the drivers side, run the emergency brake cable through between the two trailing arms. Use the clamp to fasten the brake cable to the upper rear knuckle.

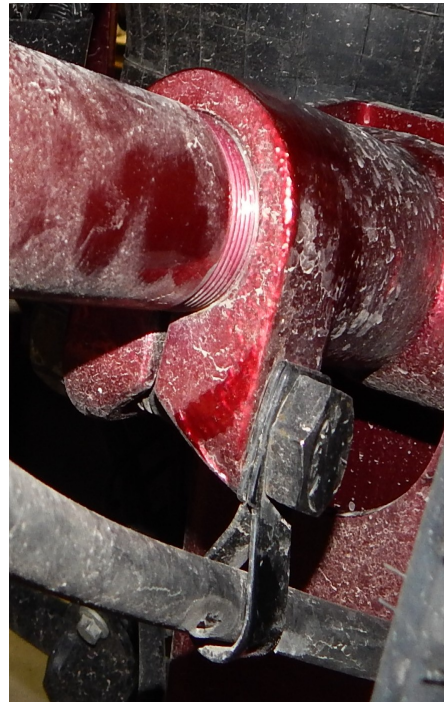
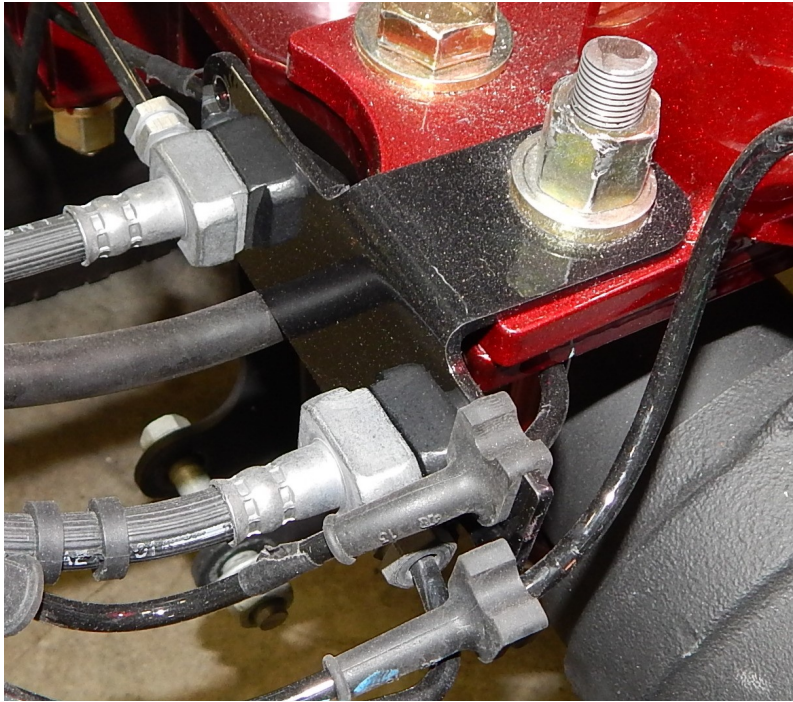
*Drivers side pictured*

*9.5" between knuckles*

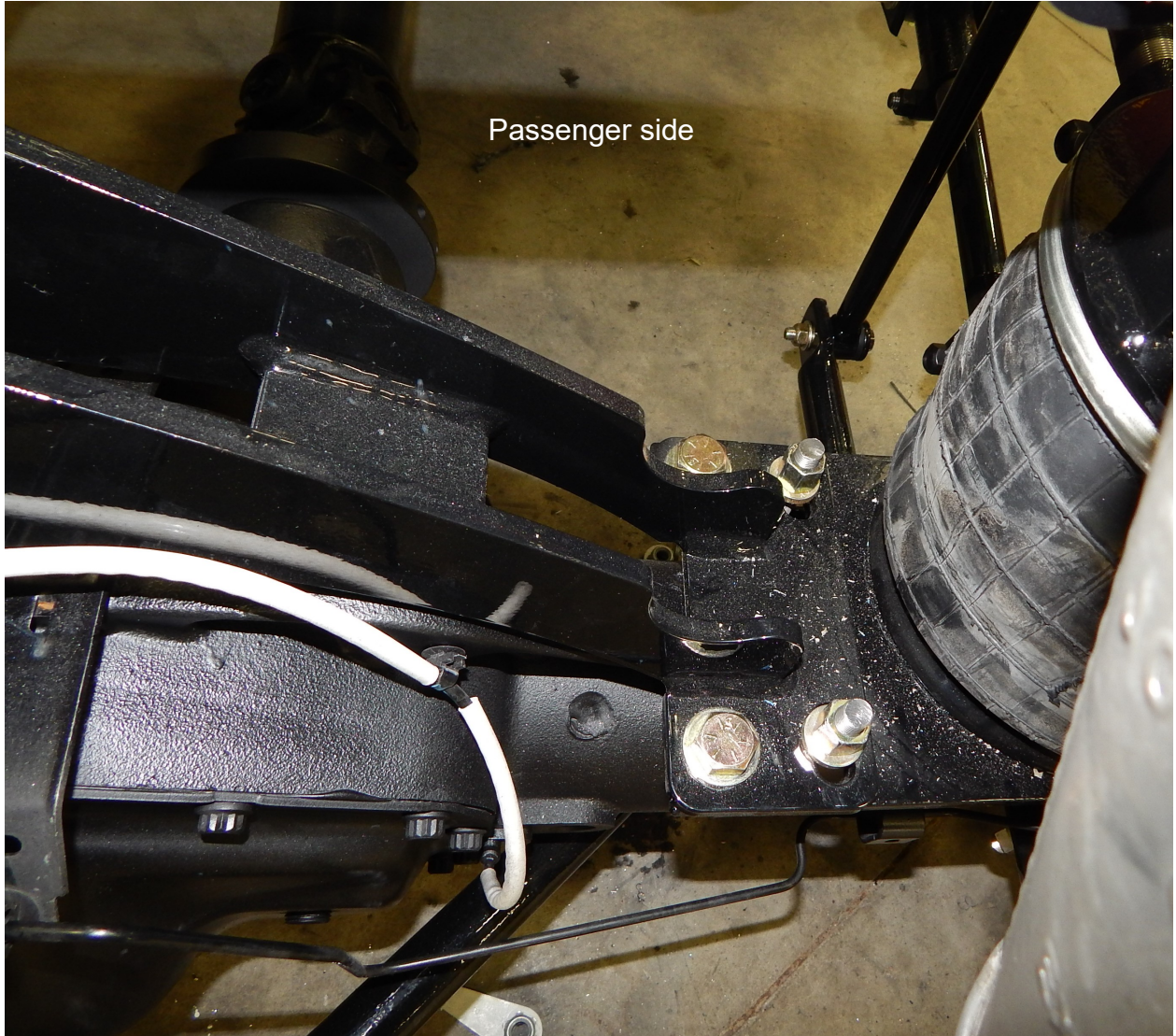
*Clamp brake cable here  
see picture on page 8,10*





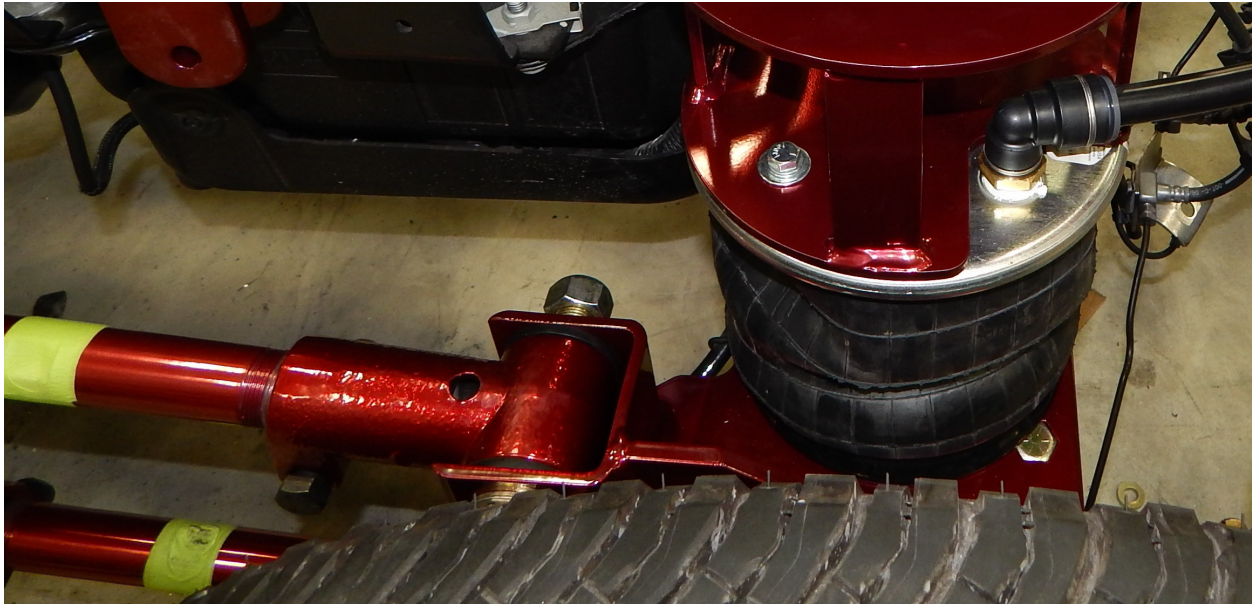






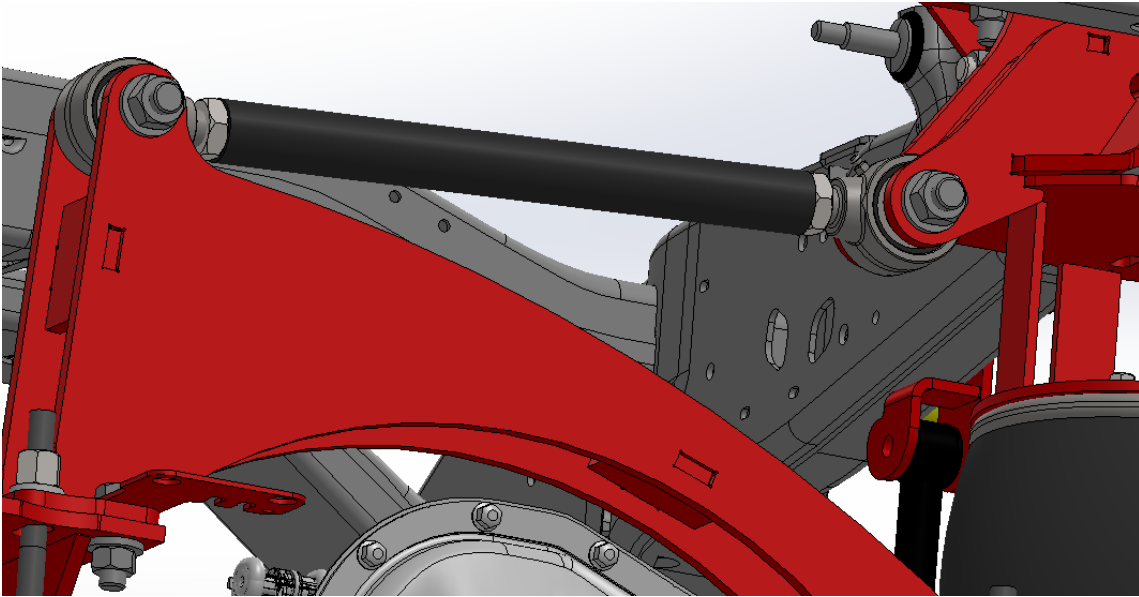


10. Locate the large 90° air bag fitting, two accumulator air tanks (Part # 69150-DS and 69151-PS) and the 3/4" air line. Insert the 90 degree air fitting and tighten into the top of the bag. Make sure it is facing towards the rear of the truck. The accumulator tanks mount to the rear factory leaf spring shackle perch with the factory bolt. Make sure to mount so the large port faces forward. Insert the straight fitting in the tank. The rear tank port uses the 1/4" or 3/8" fitting, depending on what controls you are installing. Cut the 3/4" air line around 23" long and connect the tank to the air bag.





11. Locate the rear track bar/pan hard bar (Part # 10007940). It fastens to the upper and lower pan hard bar mounts with the 3/4" x 4" bolts. Torque the 3/4" bolts to 175 ft./lbs.

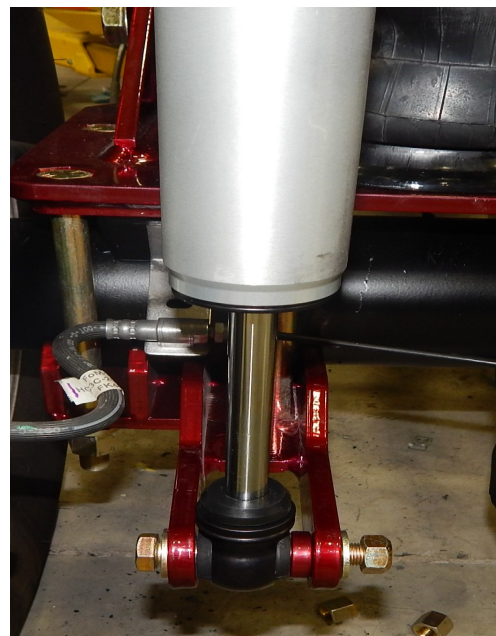


12. Long box trucks require dropping the carrier bearing on the two piece drive shaft. Locate the carrier bearing shims. Select the number of shims that give a 1" stack. Install these between the carrier bearing and the crossmember that the carrier bearing mounts to.

13. Locate the rear shocks. They fasten the upper and lower shock mounts with the 1/2" x 3-1/2" bolts. Depending on if the shocks are heim end or bushing mount, use the provided spacers or flat washers to center up the shock in the shock mount. Torque the 1/2" bolt to 85 ft./lbs. *More pictures on page 14.*



*Drivers side shown*



13. Locate the provided sway bar (Part # 1139-185KLD), mounting clamps (Part # 80046) and sway bar bushings (Part # 4139-185KLD). The sway bar fastens to the axle in the factory location (photo on following page). Once the sway bar is fastened in place, attach the end links (Part # 16776) to the sway bar with the 1/2" x 2-1/2" bolts. Make sure to use the large machined washer on the outside on the on the bolt head.

The upper end of the sway bar attaches to the sway bar mounting brackets (Part # 69335-DS and 69338-PS). The upper sway bar mounting brackets attach to the frame with either the factory bolts (if the truck was equipped with the optional sway bar) or the 1/2" x 1-1/2" bolts. Torque all the 1/2" bolts to 85 ft./lbs. The upper portion of the sway bar end link mounting bracket will attach with the supplied bolts. This bolt can come into contact with the DEF tank on some trucks. You will need to install the end link to the bracket and grind off the remaining threads to avoid the bolt coming into contact with the tank.

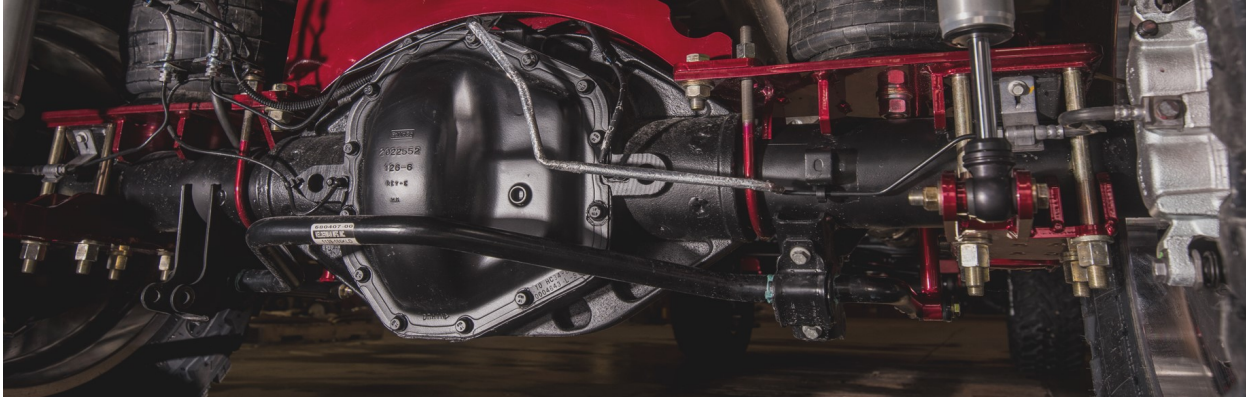


Threads shown  
ground off from  
the provided bolt.

Machined washer

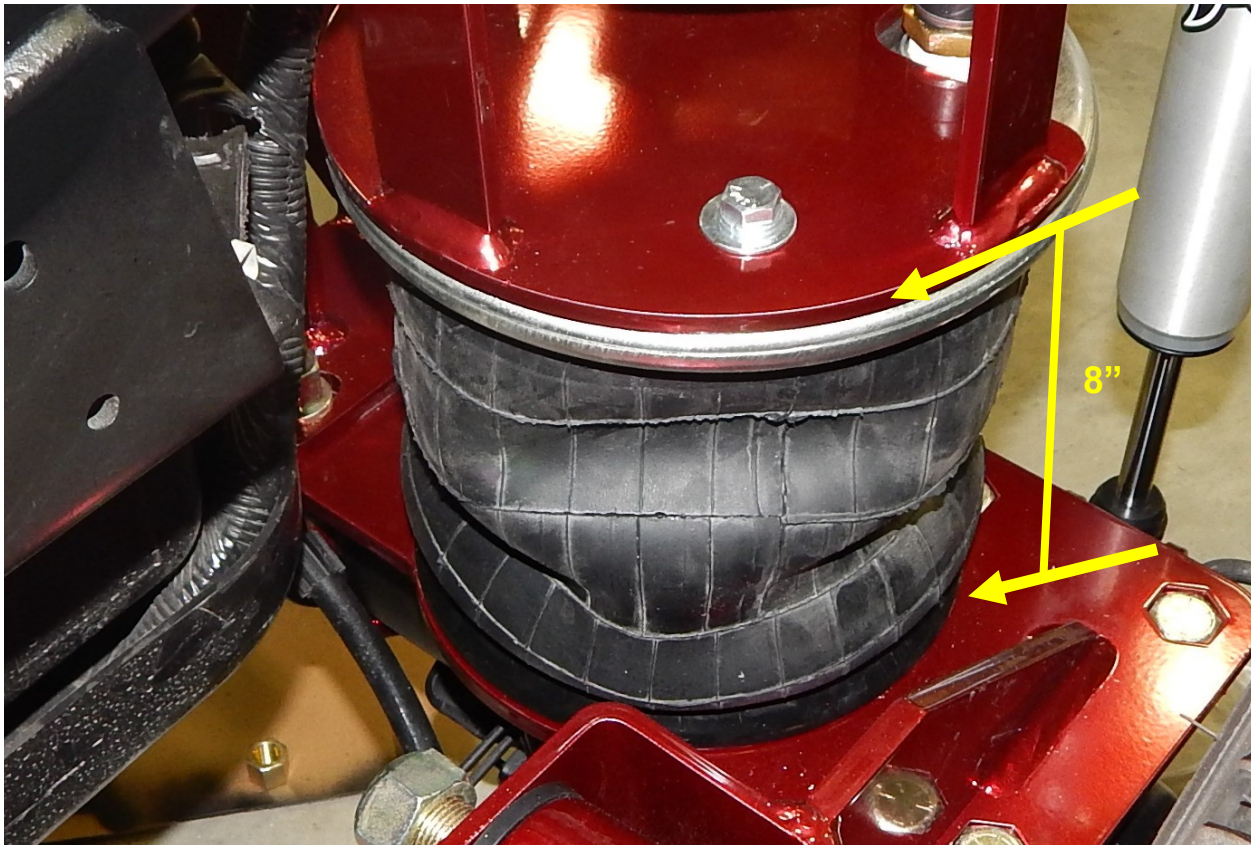






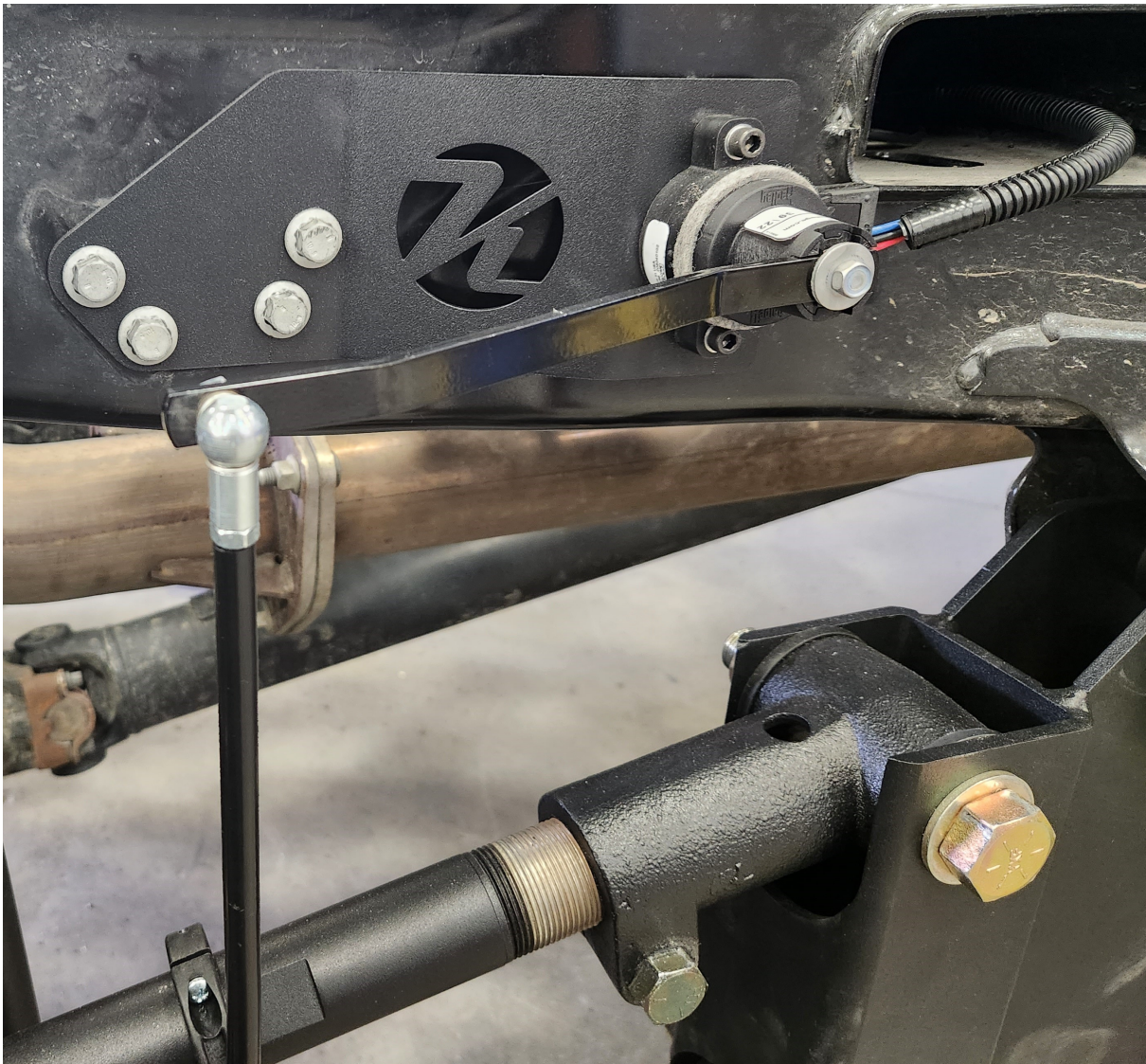
14. Inflate the air bags to 8". This is the middle range where the air bag rides the best. It can run as low as 7" and as high as 9". With the air bags at the chosen ride height, measure off the front axle ball joints to make sure the axle is square with the front (use the original measurements in step 1). You can now check the pinion angle and adjust the top trailing arm to set it back to the measurement in step 1. When you test drive the truck, if the truck pulls to the right you will shorten the drivers side trailing arms one turn. A good way to figure out which side trailing arms to lengthen for shorten is to imagine how a skateboard works. This is how you decide which side of the axle needs shortened or lengthened when trying to eliminate the pull or drift of the vehicle.

**Measure between the air bag mounting plates when measuring the height on the air bag Recommended ride height is 8".**





15. There are two different types of height control devices used, mechanical and electronic. The Hadley electronic sensor is shown below. It mounts to the side of the frame with the sensor bracket (Part# 10011863-DS/10011897-PS). Reuse the factory bolts to attach the sensor bracket. The sensor attaches to the bracket with 1/4"-20 x 1-1/4" Socket Head Cap Screws. When setting the linkage length, set the air bag at 8" and make sure sensor arm is straight out. The body of the sensor probably will be orientated with the top bolt closer to the rear of the truck. The collar will fasten to the top trailing arm and be just behind the machined flats on the bar.



The sensor needs to be indexed so the arm of the sensor is going straight out from the wiring harness plug on the backs ide of the sensor. Put the bags at 8" and set the collar so it is against the threads. Next with the sensor arm parallel with the top trailing arm. Cut the linkage length so that the arm is parallel, pull the little lock clips out of the female sockets, press the female sockets on the ball studs and reinstall the locking clips. The sensor below is using a 8" arm and a 5-6" linkage. **NOTE: The sensor will work with a 6" or 8" arm. Also mechanical sensors mount using the same bracket.**

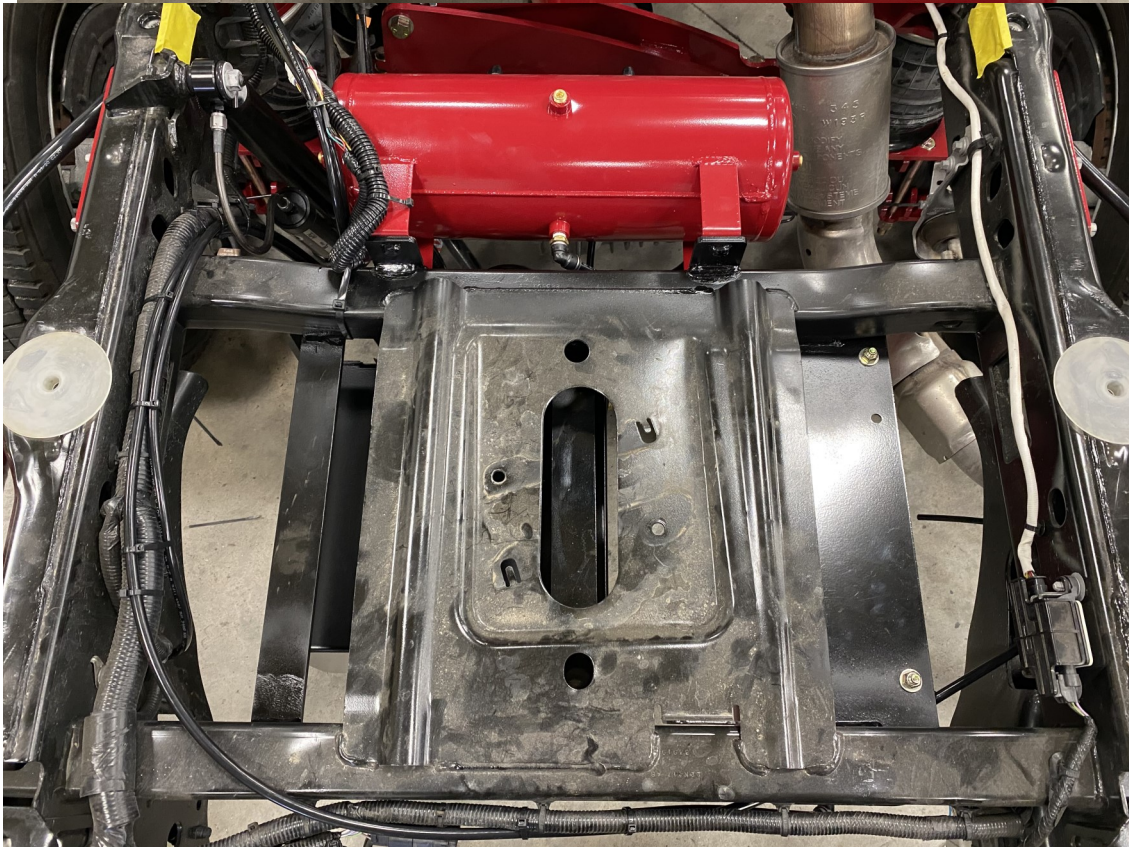
## Air Lift Box Mounting

16. The best place for the air controls box and air tanks is where the spare tire originally went. Use the supplied mounting tabs and weld them to the spare tire carrier. Make sure to use a battery protection device on the batteries or unhook the batteries before welding!

Mount one air tank beside the control box and mount the other tank on the front side of the crossmember. Refer to the picture on the next page and to the video on [youtube.com](https://www.youtube.com)

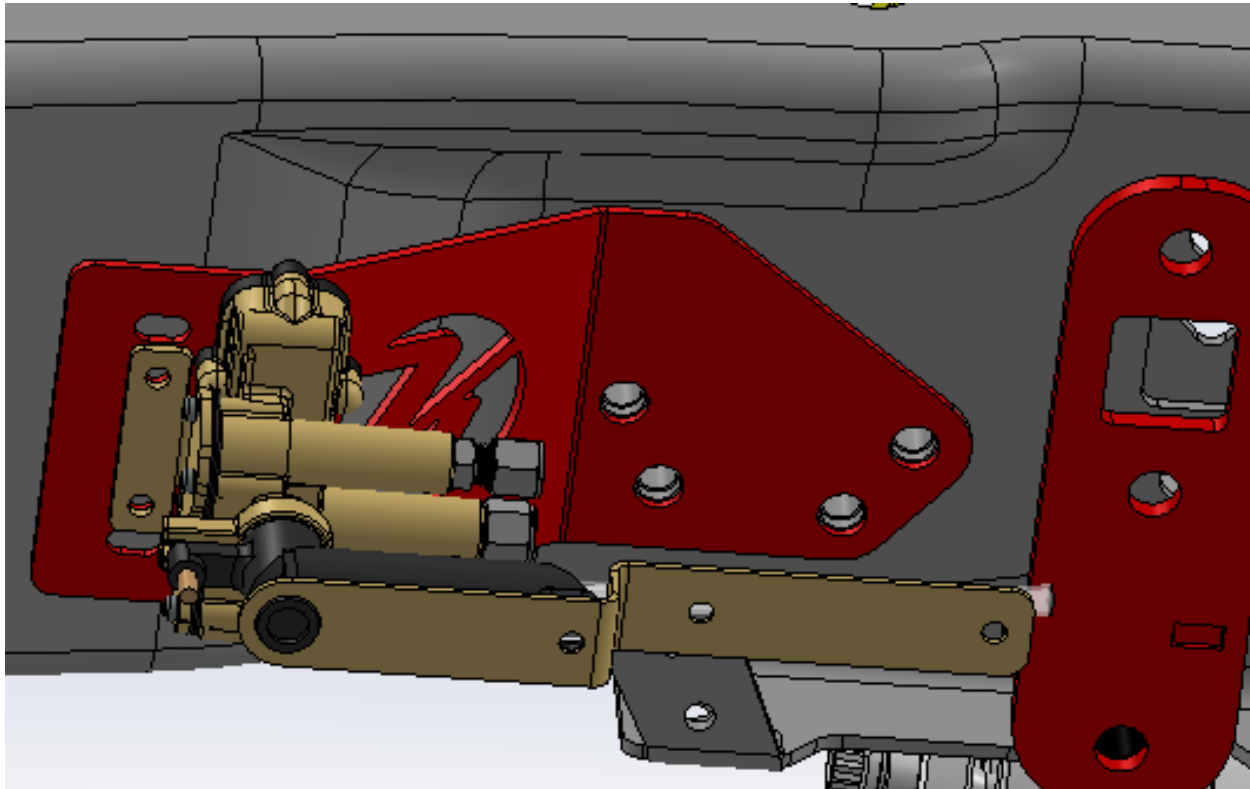








17. The mechanical height control valve mounts to the frame just like the Hadley electronic sensor. It needs to be straight up and down when bolted to the frame and the arm is straight out at ride height. NOTE: Before installing the mechanical valve, rotate the arm clockwise and counter clockwise 4-5 times each way. This will get the internals ready for operation.



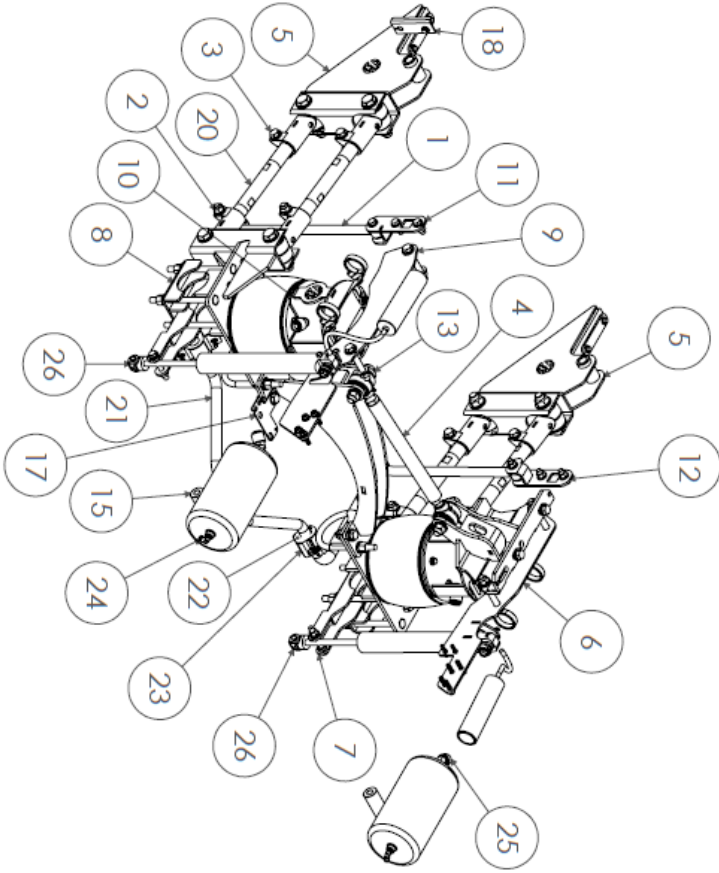
Top Port - Exhaust  
Middle Port - Air Spring  
Bottom Port - Supply

### **Mechanical Valve Mounting Tips**

- the height control valves have an 8 second delay
- before installing the height control valves rotate them 360 degrees each direction about 6 times
- the mechanical valves will mount the same direction as the Hadley



*Completed install*



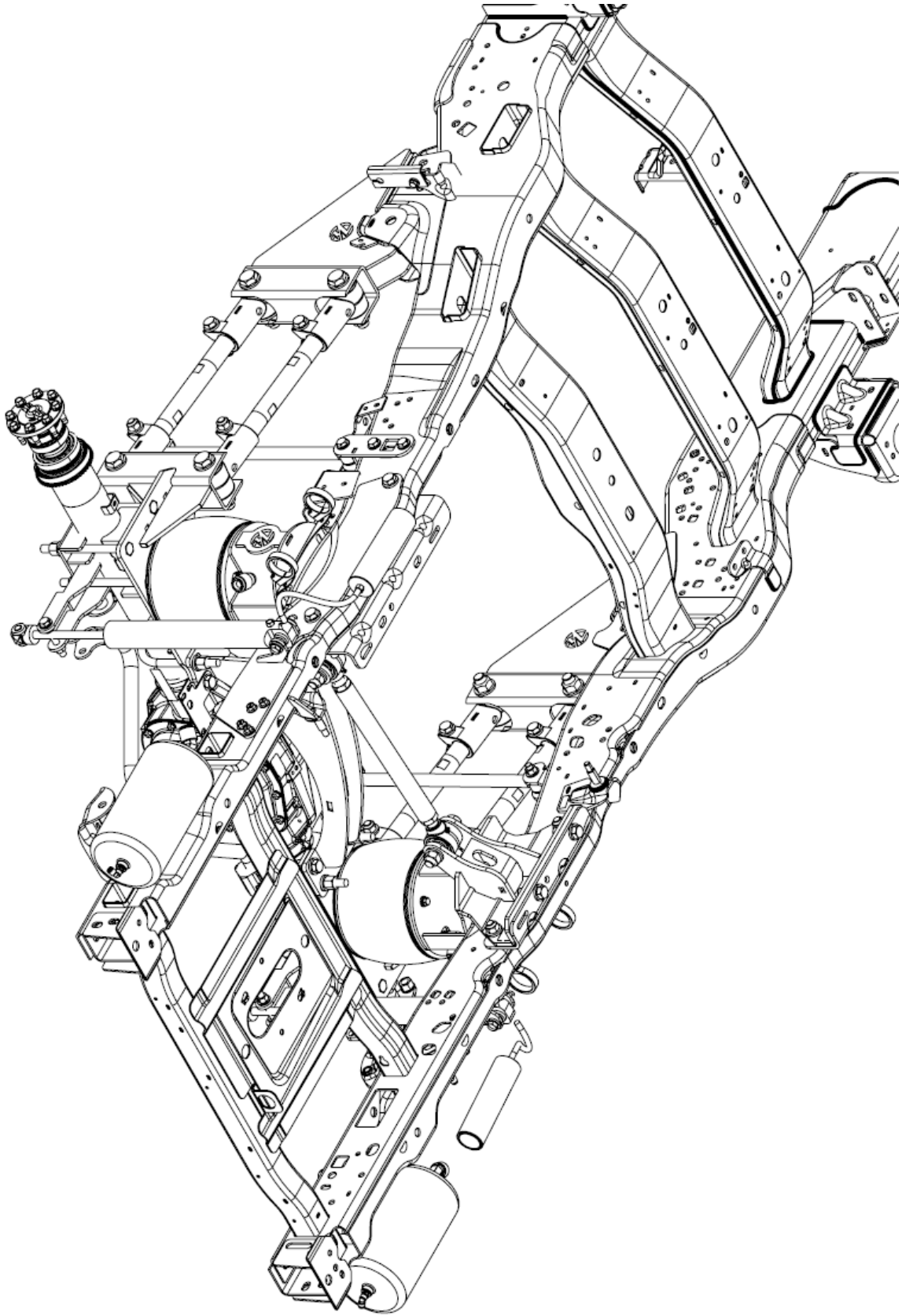
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	16776	Assemblies	2
2	18498	Assembly - 19.00 End-Link	4
3	18499	Assembly - Coat Knuckle 10006	4
4	10007941	Assembly - Coat Knuckle 10005 - 1" ID	4
5	10008001	Assembly - Rearward Bar - 14.5" Bar Length - 3/4" Bar	1
6	10008002	Assembly - Perch Mount - 5-6" Lift Kits	2
7	10008011	Assembly - Upper Bag Plate - PHS Bracket (PS)	1
8	10008012	Assembly - (PS) 3.5" Axle - Lower Bag Plate & Axle Clamp w/Shock Mount	1
9	10008013	Assembly - (DS) 3.5" Axle - Lower Bag Plate & Axle Clamp w/Shock Mount	1
10	10008014	Assembly - (DS) Side Plate w/Shock Bar - 5-6" kits	1
11	69335	Weldments	1
12	69338	(DS) End-Link Bracket	1
13	69421	(PS) End-Link Bracket	1
14	11551	Weldment - Rearward Bar Crossmember Bracket - 3/4" Bar	1
15	69150	Thick Washer 5"OD X .55" ID X 1/4"	2
16	69151	(DS) Accumulator Tank	1
17	69036	Parts	1
18	69444	Rear Axle Brake Line Bracket	1
19	69598	Brake Relocation Bracket	1
20	52114.5	10mm Wingnut	4
21	1199-189KLD	14.5" Trailing Arm Bar	4
22	4139-189KLD	Sway Bar Bushing	1
23	80046	Purchased Parts	2
24	80094	Retainer (D-ring)	2
25	80261	90° Male Elbow/Tube 1/4" x 1/4" 18 NPT	2
26	10003984	45° Male Elbow, 3/4" x 3/4" - 14 NPT - Brass Fitting, Swivel	2
27	12021	Shock - Rear - Kelderman 2.0 RMT	2
28	12011	Hardware	2
29	13004	Bot - 1/2"-20 X 3" Gr.8	2
30	13022	Bot - 3/8"-24 X 1" Gr.8	1
31	13164	1/2" Flat Washer	4
32	13893	3/8" Flat Washer	2
33	13949	Hex Nut - 1/2"-20 Gr.8 YZ	2
34	95065A106	M10 Lock Washer	4
		Flange Hex Bolt: M10-1.5 X 35mm - 10.9 - B0	4
		Top Distorted Thread Lock Nut - 3/8"-24 - Gr.8 - YZ	1

REV	ECN	CHANGE DESCRIPTION	CHANGE	DATE

3RD ANGLE PROJECTION UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DIMENSIONS IN PARENTHESES ARE DIMENSIONS IN MILLIMETERS FRACTIONAL DIMENSIONS SHALL BE TO 1/32"	A DO NOT SCALE DRAWING 1:20 Approximate Weight = 84
PROJECT: 2017 F250/350 Pickup (SRW) PART NUMBER: KLM-4-59004 DATE: 10/20/2024	







Commercial Product Warranty, Disclaimers and Warnings  
Kelderman techs are available at 641-673-0468 M-F 7:00-4:00 CST

Kelderman Air Suspension Systems offer a 3 year/ 100,000 mile Limited Warranty, parts and labor, to the original retail purchaser who owns the vehicle on which the unit was installed, for defects in materials and workmanship related to the fabricated parts. Non fabricated parts such as air bags, air compressors, gauges, solenoid kits, and electronic or mechanical air ride control systems are covered for 1 year/ 50,000 miles for parts and labor. In cases where ride control systems manufactured by The Air Lift Company or Hadley Products are provided, the ride control warranty in this document will not apply. Instead, the warranty will be that of Hadley and Air Lift.

Kelderman Air Suspension Systems must be contacted for warranty authorization before any diagnostic work or repairs are performed. At that time, Kelderman will provide diagnostic assistance and authorization for the repairs if warrantable. Any unauthorized diagnostic work performed before contacting Kelderman will not be covered under the warranty program if deemed unreasonable.

Kelderman Air Suspension System does not warrant any product for finish, alterations, modifications and/or installation different from Kelderman's instructions. Alterations / modifications to the final product include, but are not limited to powder coating, plating, and/or welding which will void the warranty. Some damage may occur to the finish of the parts during shipping. This is considered normal and is not covered under warranty.

Kelderman tries to ensure that the suspension parts fit the vehicles they were designed for, but due to unknown vehicle manufacturer's production changes and/or inconsistencies by the vehicle manufacture, Kelderman cannot be responsible for 100% fitment.

Kelderman's obligation under this warranty is limited to the replacement of the defective parts only. Freight charges, incidental or consequential damages are expressly excluded from this warranty. Kelderman is not responsible for damages and/or warranty of other vehicle parts related or non-related to the installed Kelderman Air Suspension System. This warranty is expressly in lieu of all other warranties expressed or implied. This warranty shall not apply to any product that has been subject to accident, negligence, alteration, abuse or misuse as determined by Kelderman.

Kelderman Air Suspension Systems are designed to be installed, and run at the recommended ride heights provided by Kelderman. All warranties will become void if Kelderman systems are run outside the recommended ride heights, or if the systems are combined/substituted with other suspension kits. Combination and/or substitution of other components may cause premature wear and inhibit the Kelderman Air Suspension from operating as designed, which may cause severe injury or death. Kelderman does not warrant parts not manufactured by Kelderman.

It is the installer and sellers responsibility to review all these warranties, warnings and disclaimers with the consumer prior to installation.

Kelderman reserves the right to supersede, discontinue, change designs, finishes, part numbers and/or applications of parts deemed necessary without written notice. Kelderman is not responsible for misprints, or typographical errors within the catalog or price sheets.

December, 2011